



PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

An Ice-Cream Dispensing Unit for Automatic Ice-Cream Makers

- We, I.M.A. INDUSTRIA MACCHINE AUTOMATICHE S.R.L. a Company organised according to the laws of Italy, of Genoa-Pegli, Italy, do hereby declare the invention for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- This invention is concerned with a soft ice-cream dispensing unit for automatic ice-cream makers.
- Soft ice-cream is produced by emulsifying air with a basic mix to be frozen in the type of automatic ice-cream maker where the ice-cream is made and immediately made available to a consumer, the amount of ice-cream dispensed being automatically reconstituted.
- Dispensing and metering taps have already been proposed for various types of machines such as coffee and ice-cream dispensing machines which comprise generally a piston sliding within a cylinder which, on its upward stroke opens an inlet port for the substance to be metered and dispensed and on its downward stroke expels the measured amount of the substance which has entered the cylinder during the upward stroke of the piston.
- In applying this known type of tap to automatic ice-cream makers the disadvantage arises of not being able to dispense more than one flavour of ice-cream at a time and so there has to be one tap for each ice-cream flavour. Furthermore, this battery of taps does not easily lend itself to making 'mixed' ice-creams of several flavours put together, except by using complicated systems of connecting up the outlets.
- Another serious drawback experienced with these taps is the dripping which occurs when the machine is not in use. This is because a small amount of ice-cream always remains behind at the tap outlet lip and melts and drips at room temperature. Attempts to make the shape of the piston match exactly and so seal the bottom opening in the cylinder have so far not been successful.
- Another disadvantage experienced with the known cylinder and piston dispensing systems is that usually they are both made of the same material and so wear quickly and there is also considerable resistance to the piston sliding in the cylinder.
- This invention eliminates, or greatly reduces, both wear and dripping and it is possible by means of only one turn of a single tap to dispense whatever flavour of ice-cream is desired from those in the machine, or a mixture of flavours.
- According to the present invention there is provided a "mantecato" type ice-cream dispensing unit for automatic ice-cream makers which comprises a cylinder-block adapted to be fixed to an ice-cream maker and formed with horizontal channels which register outwardly with the outlets from the ice-cream maker's production chambers and inwardly with a through vertical passage in the block of circular cross-section, a cylinder rotatably fitted inside said vertical passage and formed with ports that can be positioned by turning of the cylinder to coincide with one or more of said horizontal channels in the block the cylinder being provided near its lower end with a flat apertured disc and also fitted with a handle operable in a bottom horizontal frontal slot in the cylinder-block for turning the cylinder about its axis, and a solid, flat-bottomed piston slidable in the cylinder downwards as far as the perforated disc and upwards until the ports in the cylinder are completely uncovered thereby, said piston being movable by a pivoted lever moving in a top vertical slot in the cylinder block.
- According to a preferred embodiment of the invention the cylinder is made of acid-proof metal, preferably stainless steel, and the piston and cylinder block are made of synthetic plastic.
- It will be appreciated that by simply turn-

ing the cylinder, one or more choices of flavour of ice-cream can be delivered into the cylinder and how, after dispensing the desired ice-cream, the bottom of the piston remains firmly attached to the apertured disc, entirely eliminating any remnants of ice-cream and the possibility of dripping.

To enable the invention to be clearly understood a preferred embodiment thereof will now be described by way of example with reference to the accompanying drawings, wherein:—

Figure 1 is a perspective view of the dispensing unit;

Figure 2 is a partial cross-section showing the outlets from the production chambers in an open position towards both chambers;

Figure 3 is a partial cross-section showing the outlets from the production chambers in an open position towards one chamber and a closed position towards the other; and

Figure 4 is a cutaway perspective view of the metering and dispensing unit.

Referring to the drawings, the dispensing unit according to the invention, assuming that there are two production chambers, consists of a cylinder-block 1, preferably made of plastic, adapted to be fixed to the ice-cream maker to coincide with the outlets from the two chambers and in this cylinder-block 1 there is a through vertical passage of circular cross-section, in which is located a metal cylinder 2, which can rotate about its own axis. This cylinder 2 is preferably made of stainless steel, and is provided with two ports 12 and 13 placed at the level of the two channels 10 and 11 in the cylinder-block 1 coinciding with the aforementioned outlets from the production chambers. This cylinder 2 is provided at the bottom near the dispensing mouth with a disc 8, which may be of metal, and formed with a star shape opening 9. The cylinder is fitted with a handle 3 to control the rotation of the cylinder, and this handle extends through a horizontal slot in the front of the block 1. A solid piston 7, preferably made of plastic, is slidable inside cylinder 2 and moves upwards and downwards under the control of a handle 5 pivoted on a pin 4 fixed to the cylinder-block 1, the handle 5 having an integral arm 6 which enters piston 7 and constitutes a lever having its pivot at pin 4 and its resistance at piston 7. This handle 5 is movable in a top vertical slot in the block 1.

The operation of the dispensing unit is as follows:

When the handle 5 is pushed upwards until the end of its stroke, the piston 7 lowers until the bottom of the piston contacts the apertured disc 8. In this position, the ports 12

and 13 are blocked and the ice-cream cannot enter the cylinder 2. The desired flavour of ice-cream is then chosen by turning the handle 3 which, if rotated to the right aligns the port 13 with the channel 11 (Figure 3) and when turned to the left aligns the port 12 with channel 10, and at the halfway position aligns both ports 12 and 13 with the two channels 10 and 11, (Figure 2). By depressing the handle 5, the piston 7 is caused to rise and thus the cylinder 2 fills with ice-cream of one or more flavours as desired which is discharged under pressure from one or both production chambers. When the handle 5 is lifted again the piston 7 is lowered and expels an appropriate amount of ice-cream through the star-opening 9.

WHAT WE CLAIM IS:—

1. A soft ice-cream dispensing unit for automatic ice-cream makers comprising a cylinder block adapted to be fixed to an ice-cream maker and formed with horizontal channels which register outwardly with the outlets from the ice-cream maker's production chambers and inwardly with a through vertical passage in the block of circular cross-section a cylinder rotatably fitted inside said vertical passage and formed with ports that can be positioned by turning of the cylinder to coincide with one or more of said horizontal channels in the block the cylinder being provided near its lower end with a flat apertured disc and also fitted with a handle operable in a bottom horizontal frontal slot in the cylinder-block for turning the cylinder about its axis, and a solid flat-bottomed piston slidable in the cylinder, downwards as far as the perforated disc and upwards until the ports in the cylinder are completely uncovered thereby, said piston being movable by a pivoted lever moving in a top vertical slot in the cylinder block.

A dispensing unit as claimed in claim 1, characterized in that the cylinder and apertured disc are made of acid-proof metal, for example stainless steel.

3. A dispensing unit as claimed in claim 1 or 2, characterized in that the cylinder-block and piston are made of synthetic plastic.

4. A dispensing unit as claimed in any of the preceding claims, characterised in that the flat apertured disc is formed with a star-shaped hole.

5. A soft ice-cream dispensing unit for automatic ice-cream makers constructed substantially as hereinbefore described with reference to and as illustrated by the accompanying drawings.

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